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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,374	02/11/2004	Julio Concha	60,246-265; 10,802	3196

26096 7590 10/26/2006

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EXAMINER	
BANKHEAD, GENE LOUIS	

ART UNIT	PAPER NUMBER
3744	

DATE MAILED: 10/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/776,374	CONCHA ET AL.	
	Examiner	Art Unit	
	Gene L. Bankhead	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 18-24* is/are pending in the application.

4a) Of the above claim(s) *13-17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-4,7-12,18,19 and 21-24* is/are rejected.

7)☐ Claim(s) *5,6 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4,9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daikin Industries (WO 03/064935) in view of Hoglund et al. (US 5438844). Daikin Industrie discloses a heat pump type water heater in which when the evaporator 28 is defrosted a hot gas bypass 38 is opened and the water pump 13 is stopped until a specified time after the defrost has been started where after the water pump is driven. Hoglund teaches the use of an algorithm involving outdoor air temperature for controlling the defrost operation of a heat pump in order to increase the efficiency of the systems heat transfer (column 4, line 58 to column 5 line 13). It would have been obvious to one of ordinary skill in the art to have modified the system of Daikin Industries to have used an algorithm involving outdoor air temperature for controlling the defrost operation of a heat pump to advantageously maximize heat transfer in view of the teachings of Hoglund. The repetition of the stopping and starting of the water pump during the defrost operation is an obvious variation of the Daikin Industries control. The use of experiments to develop control algorithm parameters that represent the actual environment of a system is conventional procedure that one well versed in the art would have known at the time of the invention.

Claims 7-8, 18-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daikian Industries in view of Hoglund et al. as applied above to claim 1, and further in view of Bahel et al. (US 5319943). Bahel teaches the use of a control of the evaporator fan that stops the fan when the defrost is started and then starts the fan at the end of the defrost period (see column 10, lines 11-38). It would have been obvious to one of ordinary skill in the art to have modified the system of Daikan Industries to include the use of a control of the evaporator fan that stops the fan when the defrost is started and then starts the fan at the end of the defrost period in view of the teachings of Bahel.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daikan Industries in view of Hoglund et al. as applied to claim 1 above, and further in view of Guo et al (6318095). Guo teaches the use of the difference between outdoor temperature and the temperature downstream of the evaporator in order to determine when to defrost a heat pump evaporator. It would have been obvious to one of ordinary skill in the art to have modified the defrost control of Hoglund et al such that it included the use of the difference between outdoor temperature and the temperature downstream of the evaporator in order to determine when to defrost the evaporator in view of the teachings of Guo.

Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daikan Industries in view of Hoglund et al. as applied to claim 1 above.

In regard to claims 22, Hoglund et al. teach all limitations of claim 1, and further teach the algorithm includes defining an optimum point to initiate defrost mode based

upon temperature difference between outdoor air and a refrigerant temperature (column 5 lines 1-22).

Regarding claim 23, Hoglund et al. teach all limitations of claim 1, yet fails to explicitly teach utilizing a refrigerant pressure to determine a point for beginning the defrost cycle. Hoglund does teach utilizing variable capacity operating conditions to determining a point for beginning the defrost cycle. One of ordinary skill in the art at the time of the invention would have known to use refrigerant pressure in view of the teachings of Hoglund as it is well known in the art refrigerant pressure directly affects the systems operating condition.

Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daikian Industries in view of Hoglund et al. as applied above to claim 1, and further in view of Bahel et al. (US 5319943).

Regarding claims 24, Hoglund et al. teach all limitations of claim 1 and further teach an algorithm for defining an optimum point to initiate defrost mode based upon a temperature difference between outdoor air, and a refrigerant temperature (column 5 lines 1-22). Bahel teaches the use of a control of the evaporator fan that stops the fan when defrost is started and then starts the fan at the end of the defrost period (see column 10, lines 11-38). It would have been obvious to one of ordinary skill in the art to have modified the system of Daikan Industries to include the use of a control of the evaporator fan that stops the fan when the defrost is started and then starts the fan at the end of the defrost period in view of the teachings of Bahel.

Regarding claim 25, Hoglund et al. teach all limitations of claim 24, yet fails to explicitly teach utilizing a refrigerant pressure to determine a point for beginning the defrost cycle. Hoglund does teach utilizing variable capacity operating conditions to determining a point for beginning the defrost cycle. One of ordinary skill in the art at the time of the invention would have known to use refrigerant pressure in view of the teachings of Hoglund as it is well known in the art refrigerant pressure directly effects the systems operating condition.

Allowable Subject Matter

Claims 5-6 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed on 7/11/06 have been fully considered, but they are not persuasive. Hoglund teaches an algorithm developed to increase system efficiency as well as maximize heat transfer from the heat pump to the environment (column 5 lines 45-60). Further maximizing heat transfer to the environment and increasing system heat transfer efficiency are equivalent. The purpose of increasing system efficiency is to maximize heat transfer per unit area of space to be heated.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gene L. Bankhead whose telephone number is (571)-272-8963. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571)-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

MARC NORMAN
PRIMARY EXAMINER